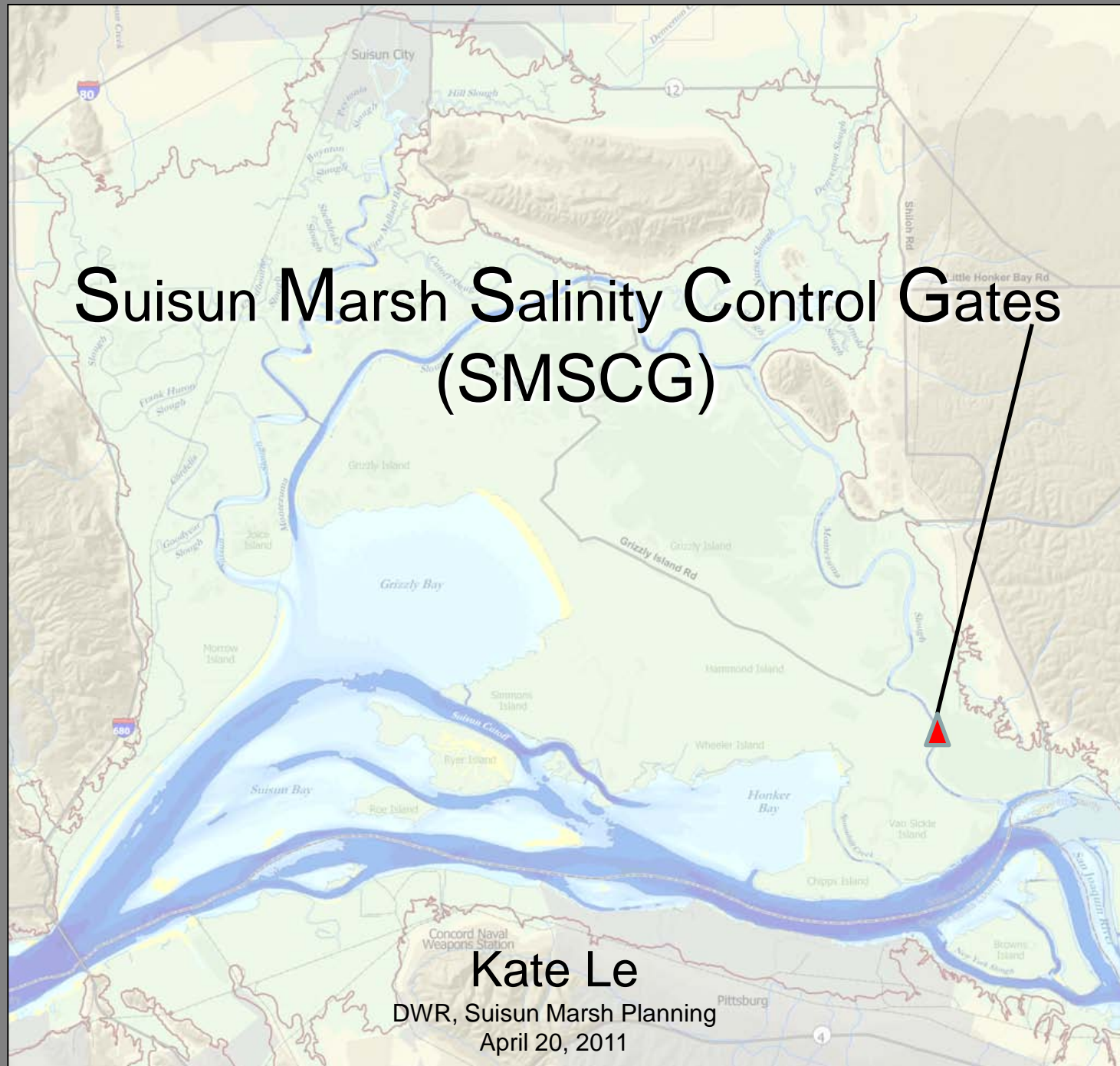


# Suisun Marsh Salinity Control Gates (SMSCG)

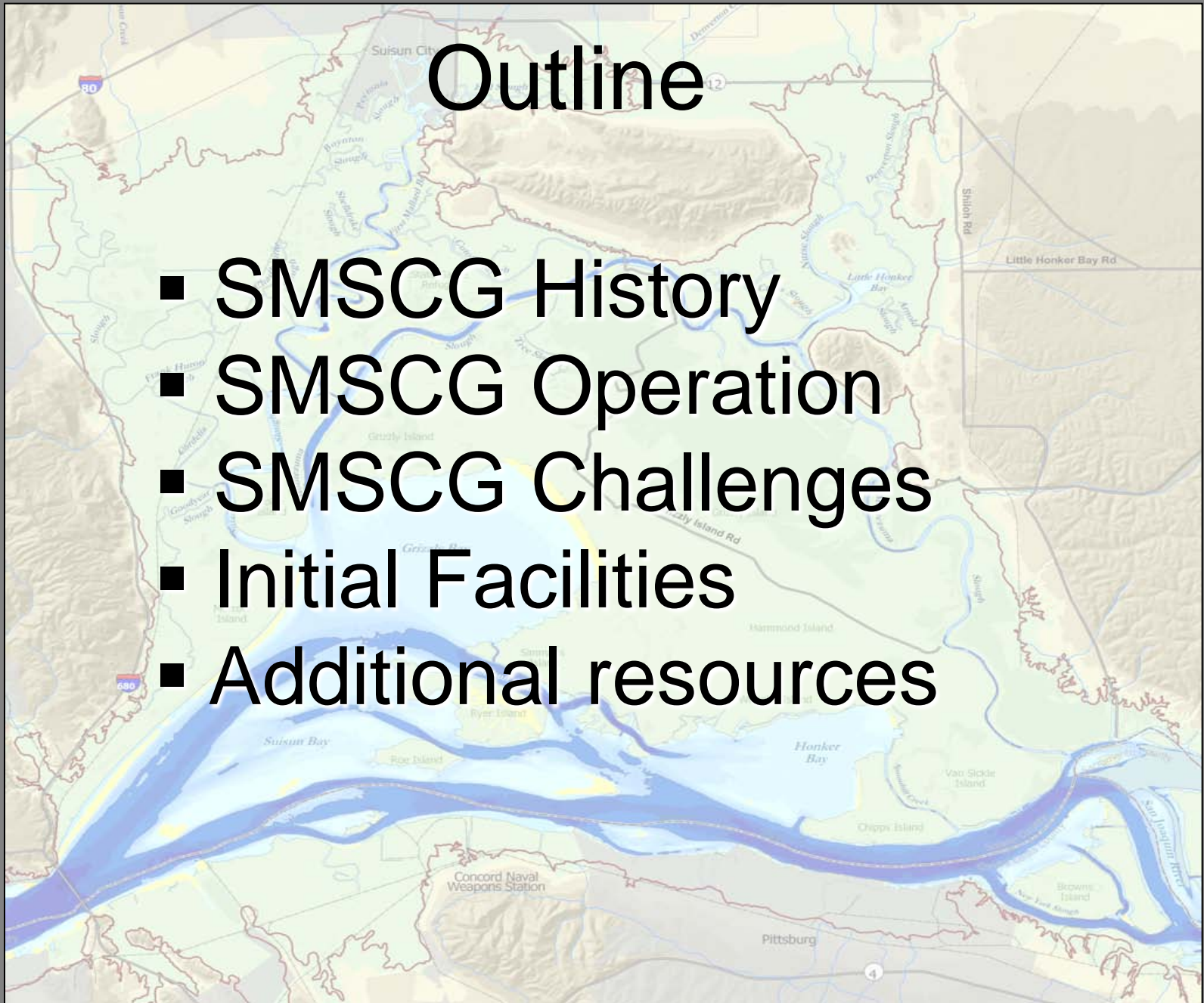


Kate Le

DWR, Suisun Marsh Planning  
April 20, 2011

# Outline

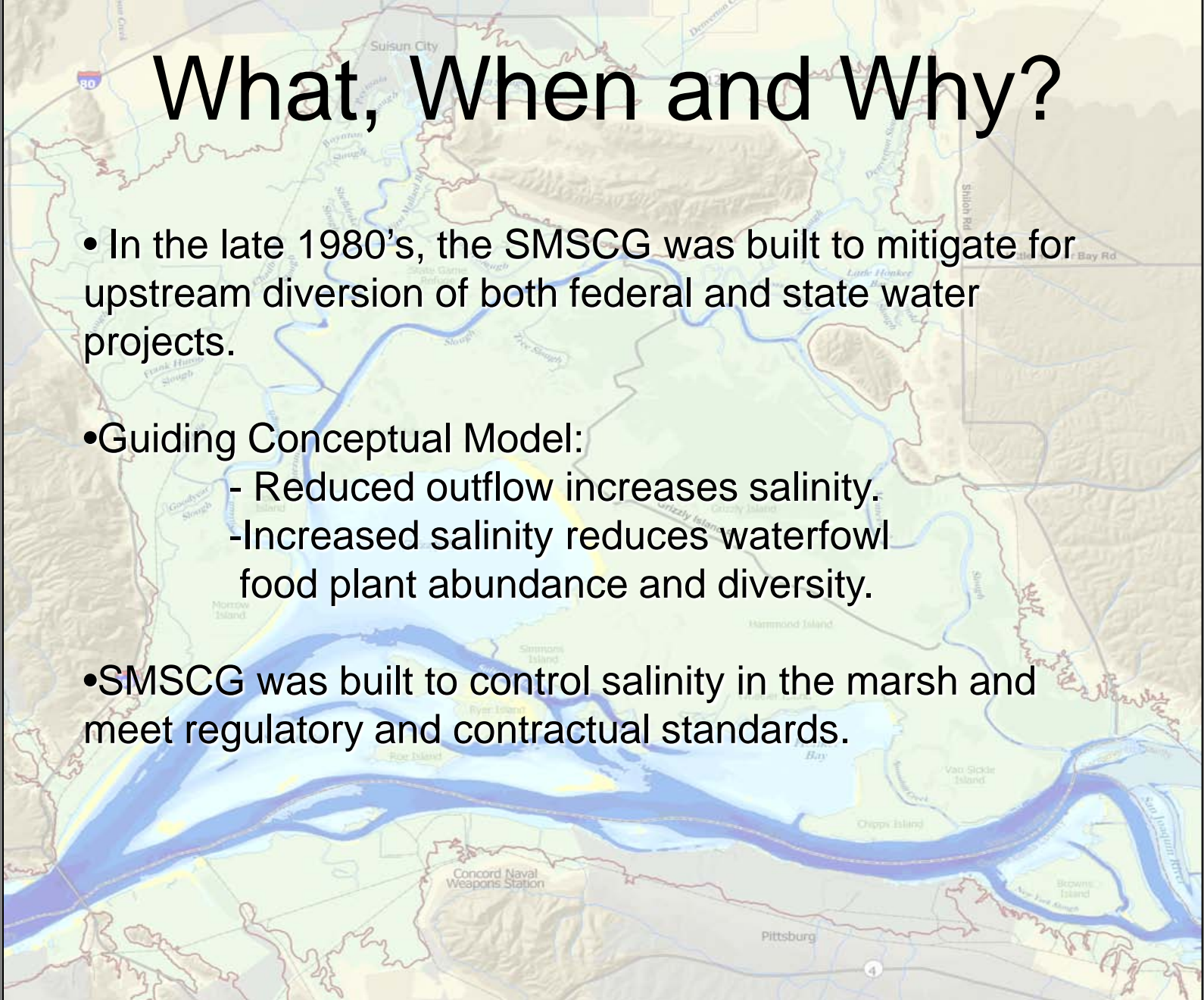
- SMSCG History
- SMSCG Operation
- SMSCG Challenges
- Initial Facilities
- Additional resources





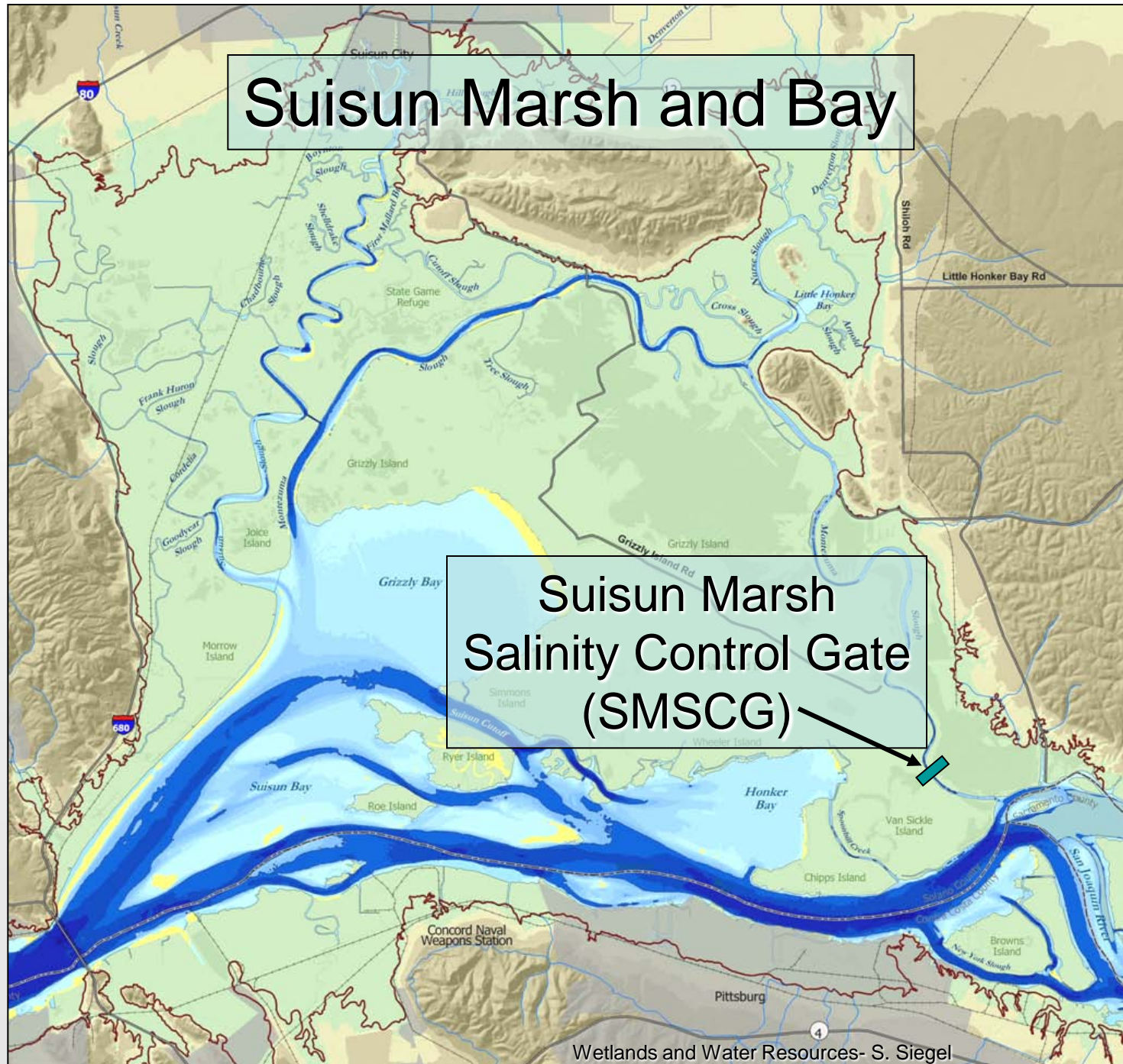
# What, When and Why?

- In the late 1980's, the SMSCG was built to mitigate for upstream diversion of both federal and state water projects.
- Guiding Conceptual Model:
  - Reduced outflow increases salinity.
  - Increased salinity reduces waterfowl food plant abundance and diversity.
- SMSCG was built to control salinity in the marsh and meet regulatory and contractual standards.



# Suisun Marsh and Bay

Suisun Marsh  
Salinity Control Gate  
(SMSCG)



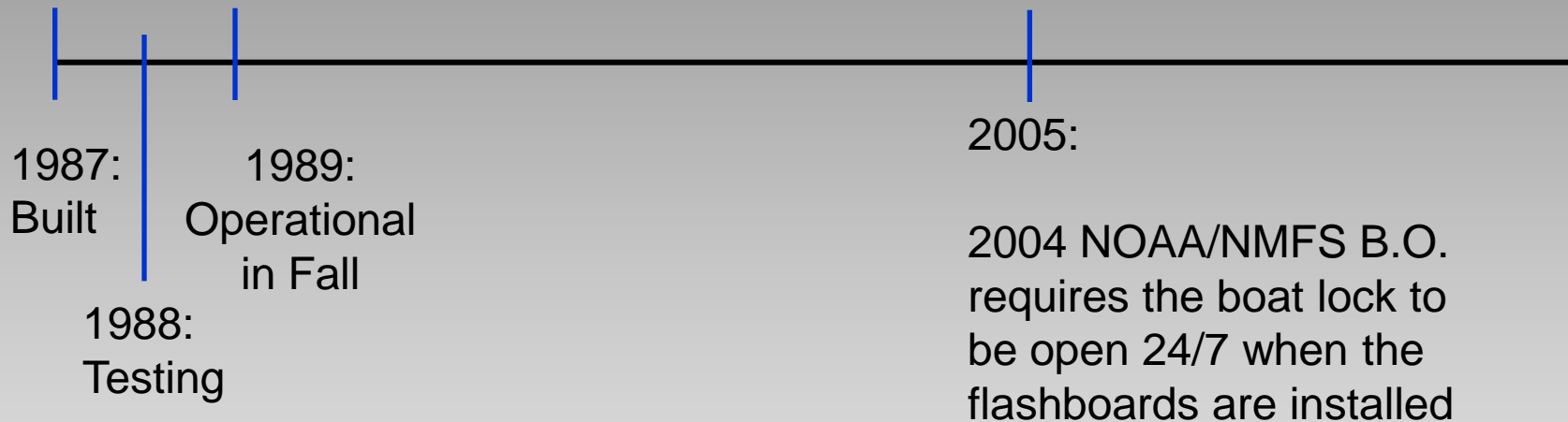


# SMSCG Components



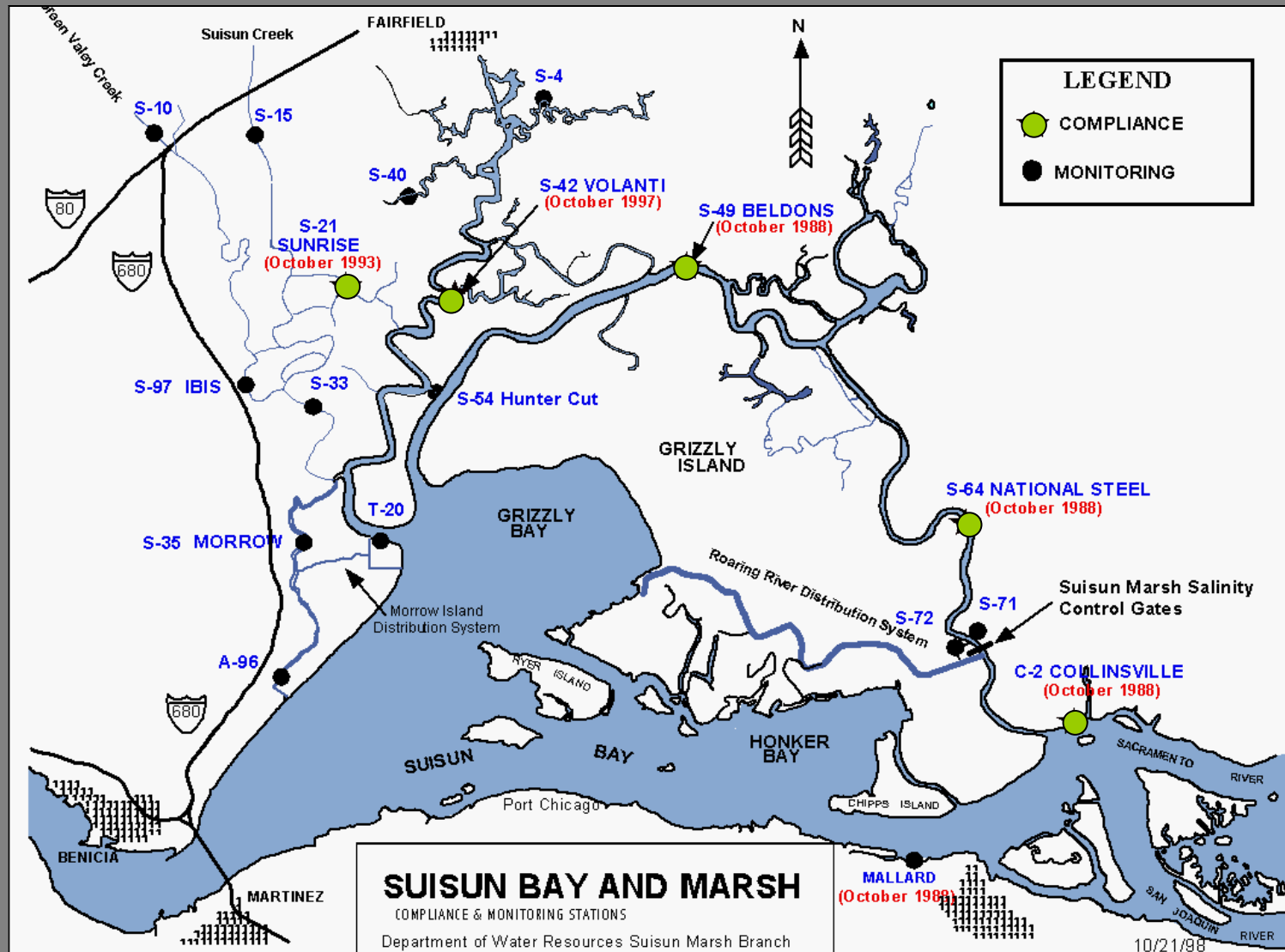
# SMSCG

## Significance Timeline of Events



# Salinity Standard Compliance Locations

## Both regulatory and contractual



# D1641 STANDARDS

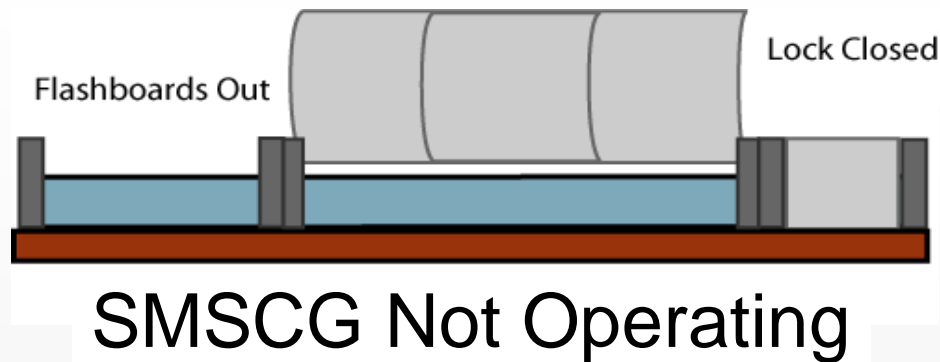
## FOR DELTA / MARSH REGIONS

CRITERIA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<b>FLOW/OPERATIONAL</b>												
• <b>Fish and Wildlife</b>												
SWP/CVP Export Limits				1,500 cfs [1]								
Export/Inflow Ratio [2]	65%		35% of Delta Inflow [3]					65% of Delta Inflow				
Minimum Delta Outflow	[4]							3,000 - 8,000 cfs				
Habitat Protection Outflow			7,100 - 29,200 cfs									
Salinity Starting Condition [5]		[6]										
River Flows:												
@ Rio Vista									3,000 - 4,500 cfs			
@ Vernalis - Base		710 - 3,420 cfs [8]				[9]						
- Pulse				[9]					+28TA			
Delta Cross Channel Gates	[10]		Closed			[11]					Conditional [12]	
<b>WATER QUALITY STANDARDS</b>												
• <b>Municipal and Industrial</b>												
All Export Locations												
Contra Costa Canal												
• <b>Agriculture</b>												
Western/Interior Delta												
Southern Delta [14]		1.0 mS										
• <b>Fish and Wildlife</b>												
San Joaquin River Salinity [15]												
Suisun Marsh Salinity [16]	12.5 EC	8.0 EC		11.0 EC						19.0	[17]	15.5

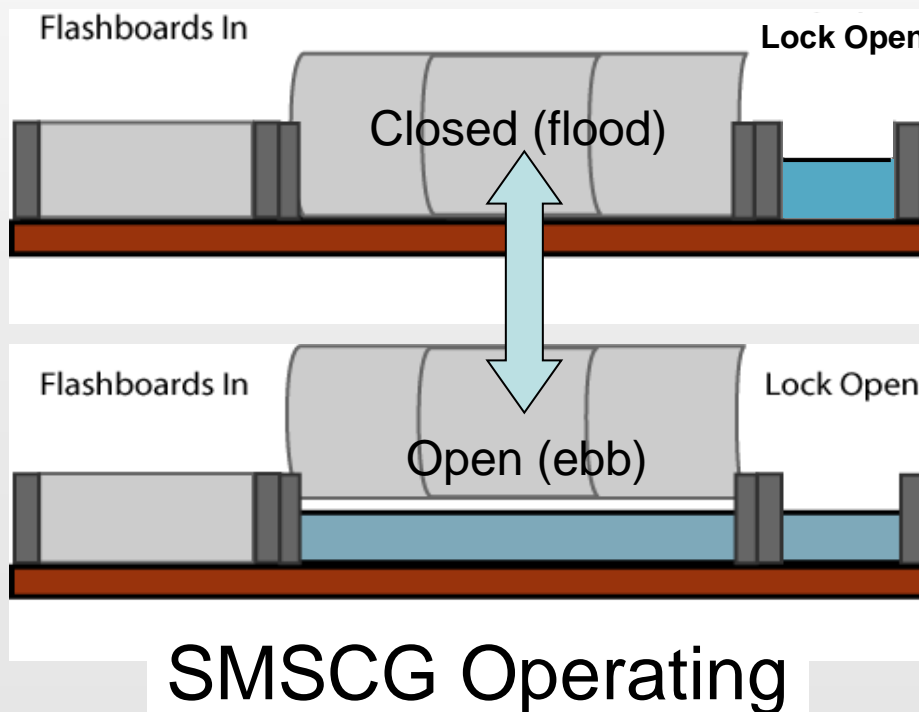


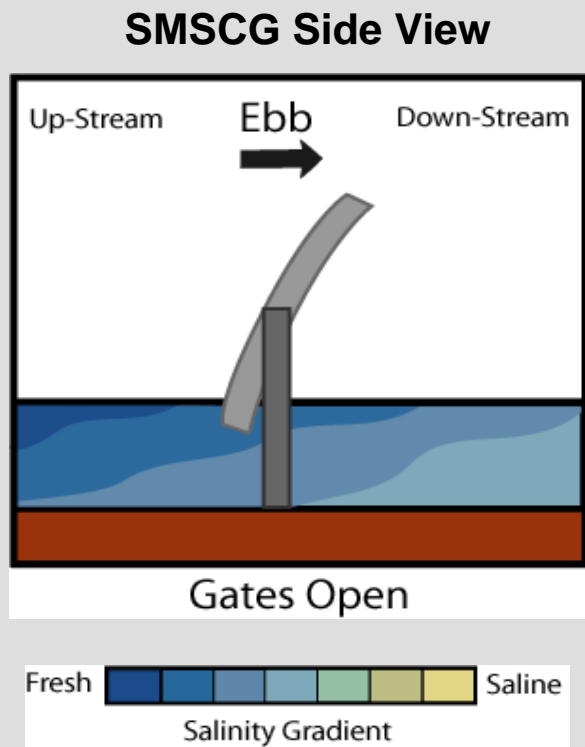
# Suisun Marsh Salinity Control Gate Configurations

June → September



October → May  
(when needed to  
meet standards)

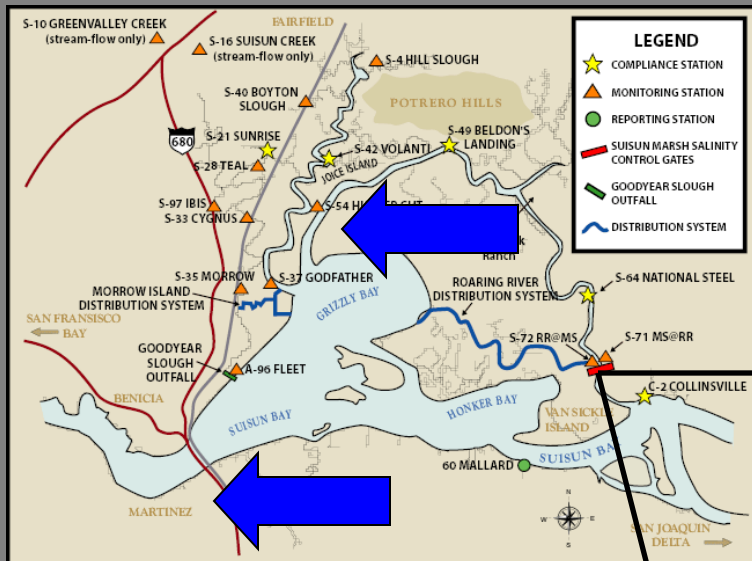




## Operational Triggers:

- Closes on flood tide when velocity  $\leq 0.1$  fps
- Open on ebb tide when the head difference between u/s and d/s water levels  $\geq 0.3$  ft

# SUISUN MARSH SALINITY CONTROL GATE FACILITY

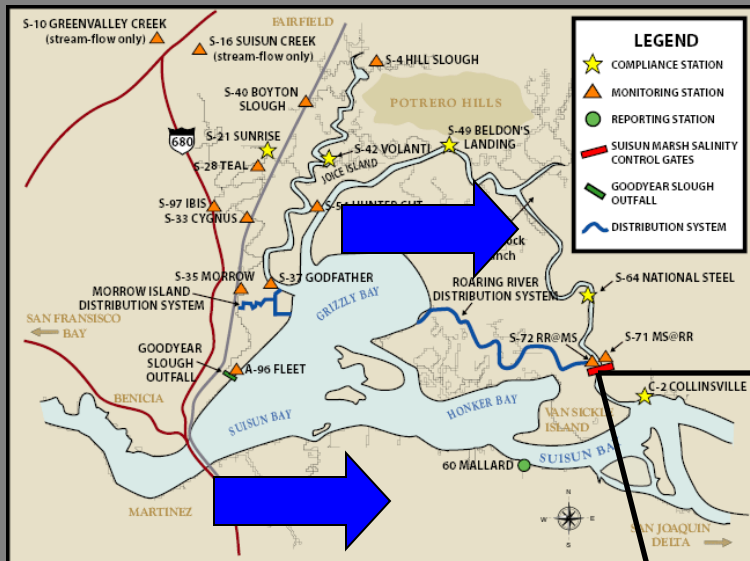


EBB TIDE (Draining) = Gates Open

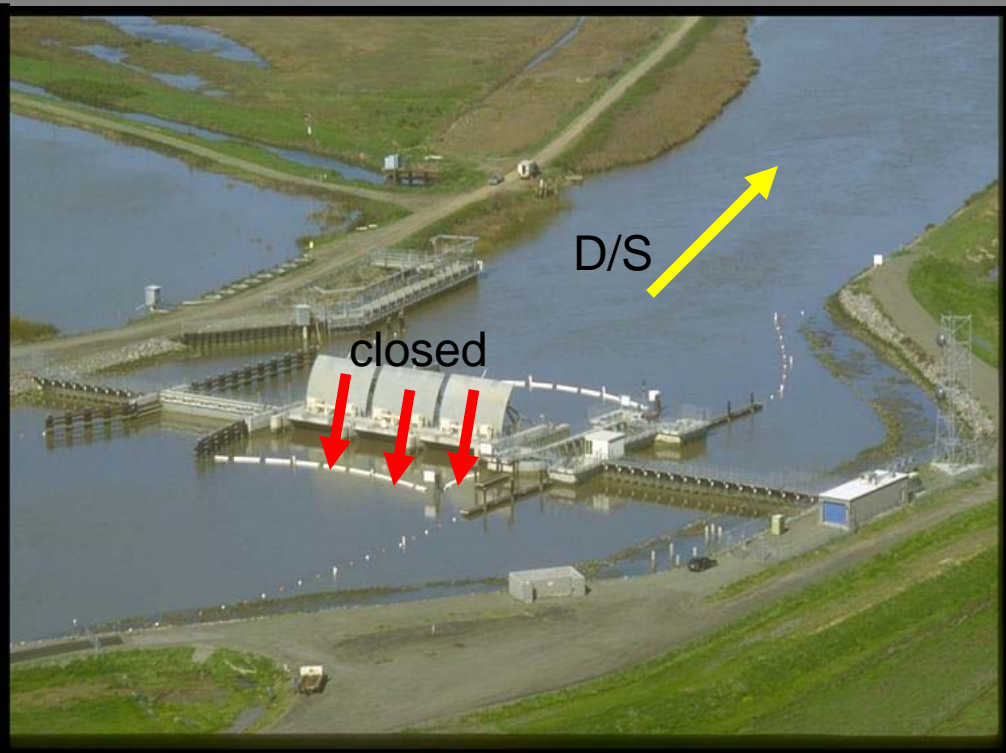




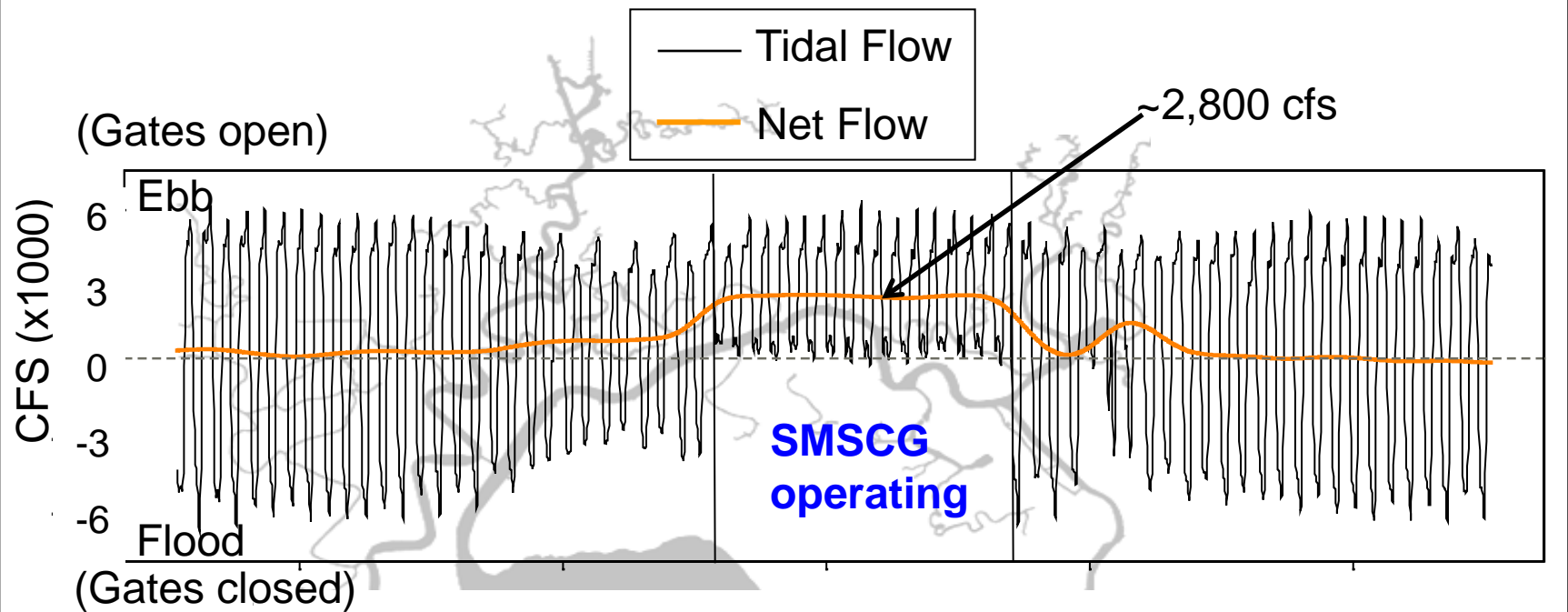
# SUISUN MARSH SALINITY CONTROL GATE FACILITY



FLOOD TIDE (Filling) = Gates Closed

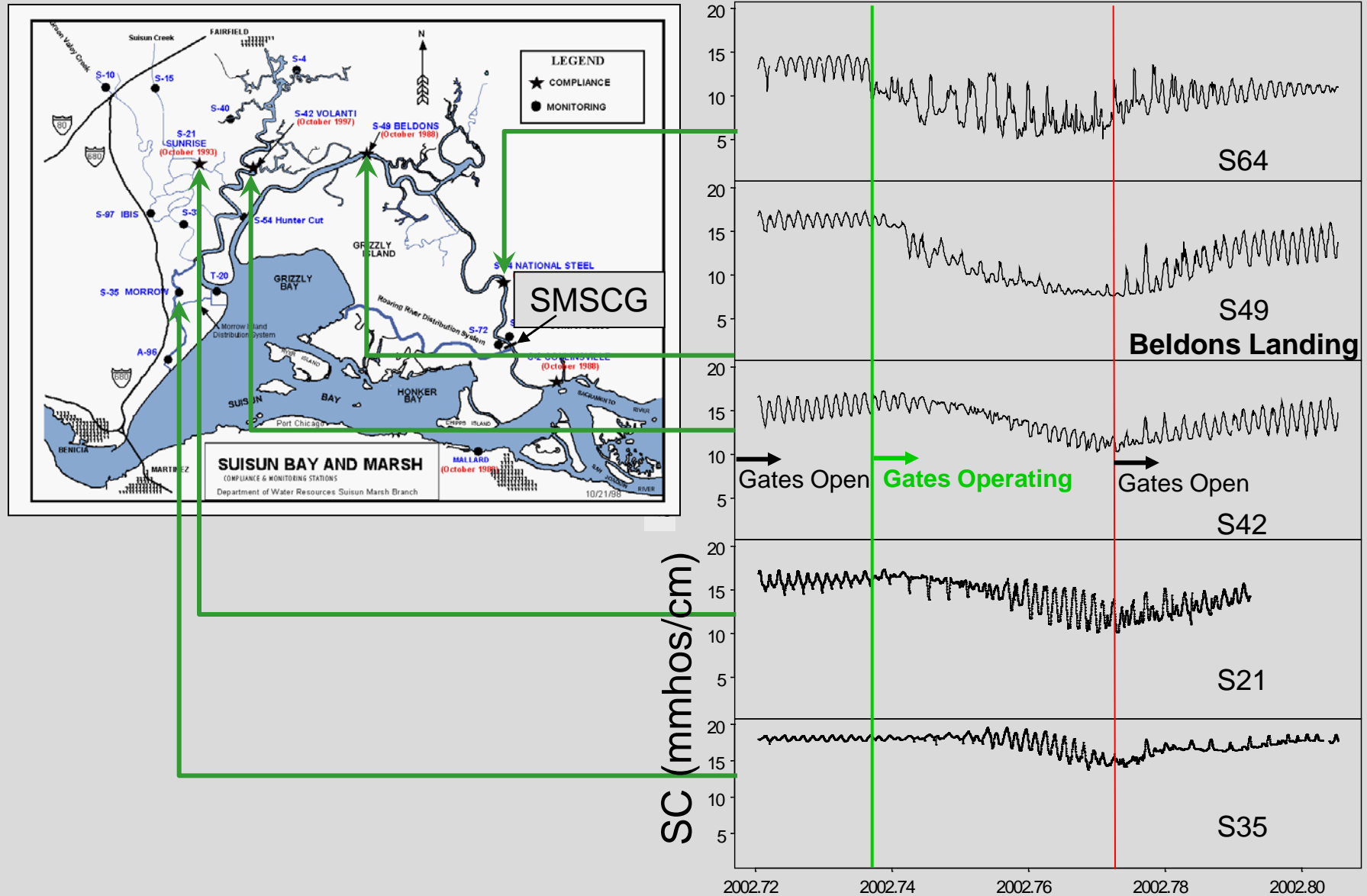


# Tidal Time Scale Flows



Measured here  
(Oltmann 1998, USGS)

# Salinity Response to SMSCG Operation



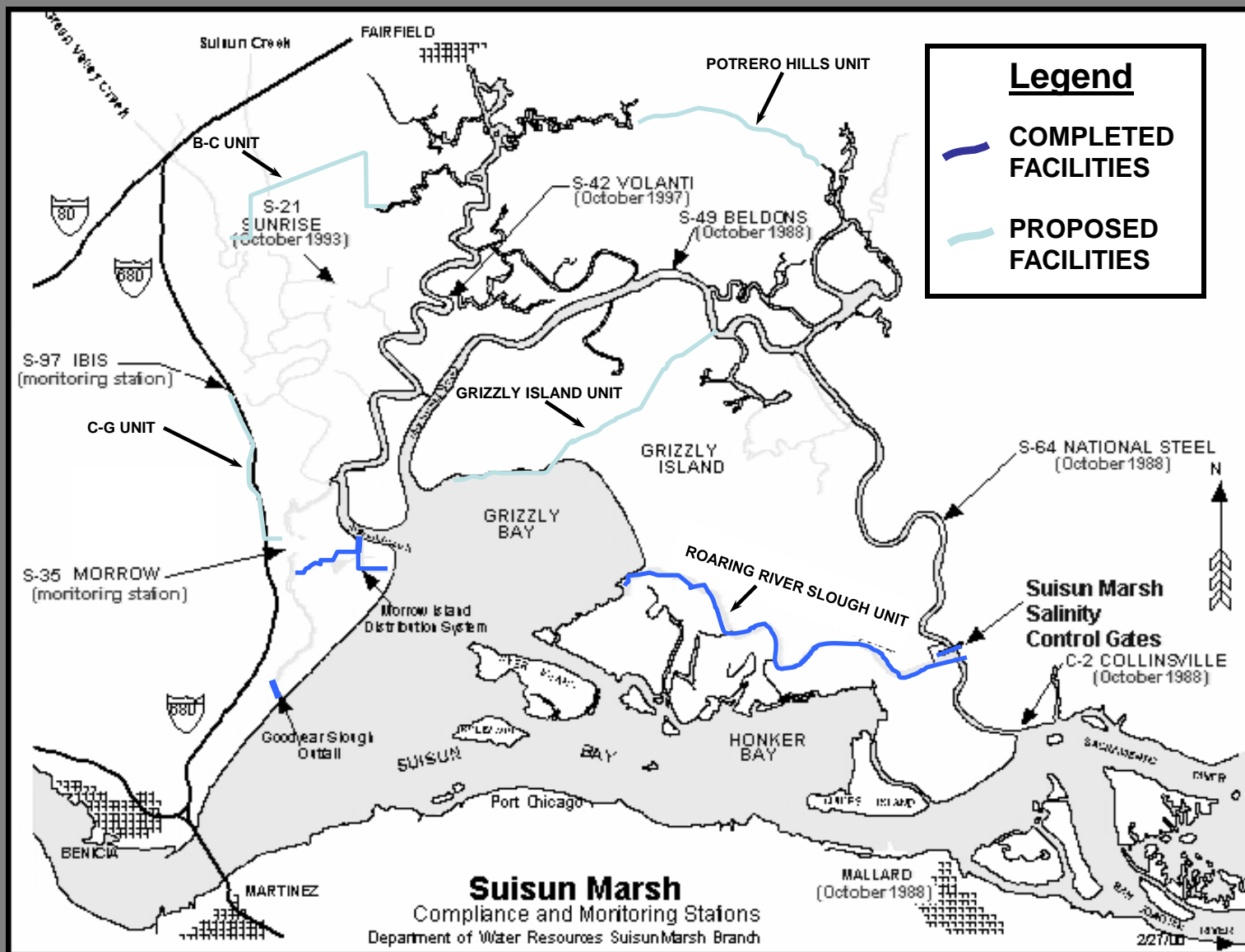


# **SMSCG CHALLENGES**

- Fisheries Issues/Concerns
- Safety issues/concerns with NOAA open boat lock requirement
- Aging of facility
- Unexpected constraints (i.e. Owl nesting)

# Initial Facilities

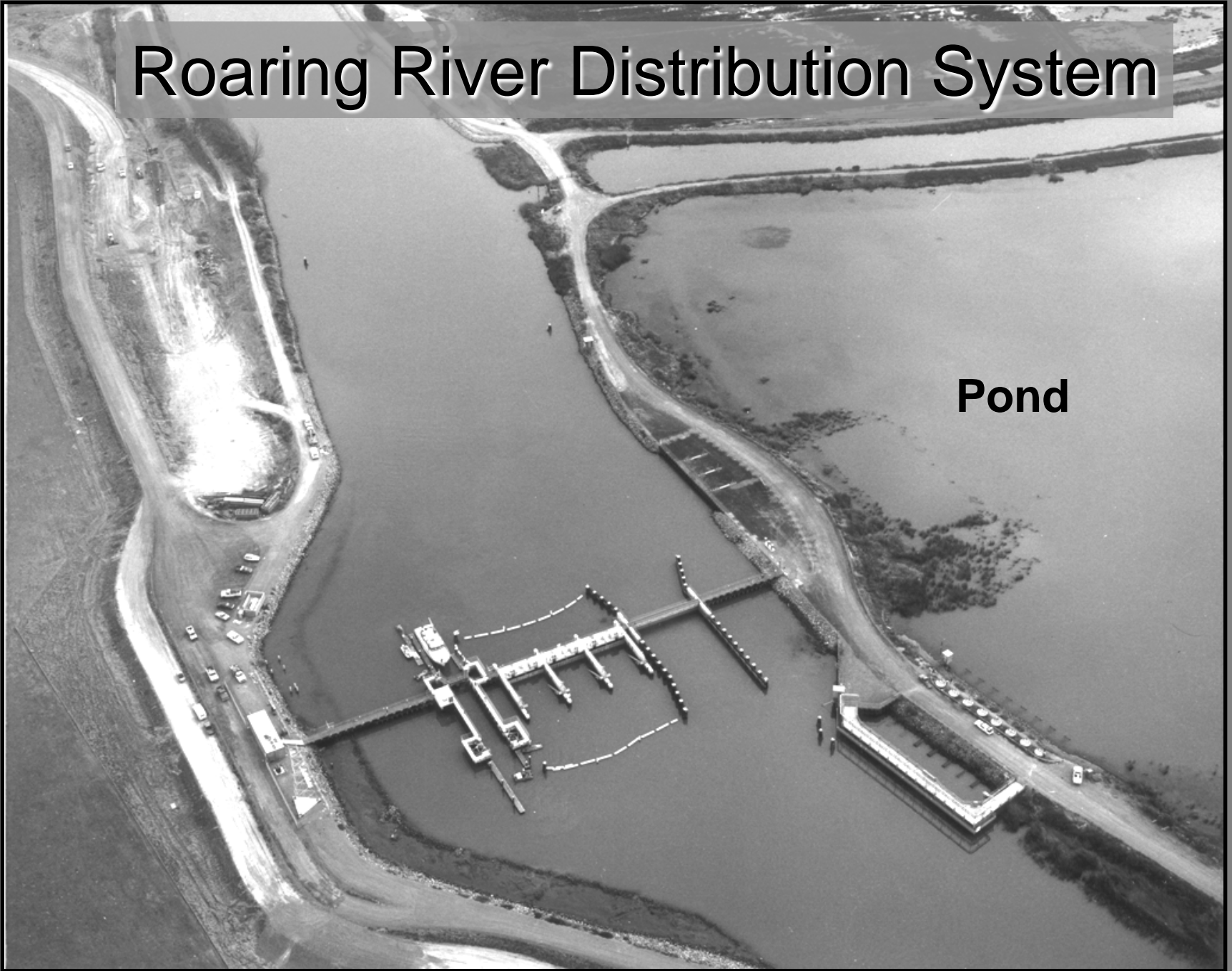
- Required under the Plan of Protection for the Suisun Marsh
- Roaring River Distribution System, Morrow Island Distribution System, and Goodyear Slough Outfall
- All initial facilities, except, GSO, were built in the early 1980's to provide lower salinity water to private and DFG managed wetlands.





# Roaring River Distribution System

Pond



# RRDS Background

- Operational since 1980
- ~8 mi long
- Serves water to ~5000 Acres (private)  
~3000 Acres (DFG)
- Intake pond on east side is about 40 acres
- Eight 60" diameter motorized slide gates  
culverts to divert water into pond equipped with  
fish screens and flap gates on the pond side
- Total of 40 turnout and drain structures
- Flood up first two weeks in October
- DFG land flood up in August (typically)

# MIDS and GSO Background

## **MIDS:**

- Operational since 1980.
- Three 48" culverts at intake to divert GYS water into MIDS.
- Drainage water from MIDS to Grizzly Bay via M-line and C-line outfalls, with ditch length about 1.6 miles and 0.8 miles, respectively.
- MIDS provide water to four managed wetlands(~1400 acres).

## **GSO:**

- Operational since 1980. 69' wide by 0.5 miles.
- Four 48" culverts with one-way flap gates on bay side allowing drainage to bay and close on flood to keep saltier bay water into GYS

# Additional Resources

**DEPARTMENT OF  
WATER RESOURCES**

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Climate Change and California's Water | Delta Initiatives | Environmental Services | IEP | All Environment Topics...



## Suisun Marsh

Photo by Angelo Garcia Jr.

### Suisun Marsh Program

#### The Suisun Marsh

Suisun Marsh is the largest contiguous brackish water marsh remaining on the west coast of North America. It is a critical part of the San Francisco Bay-Delta estuary ecosystem. Encompassing 116,000 acres, the Suisun Marsh includes 52,000 acres of managed wetlands, 27,700 acres of upland grasses, 6,300 acres of [tidal wetlands](#), and 30,000 acres of bays and sloughs. It is home to public waterfowl hunting areas and 158 private duck clubs. The Marsh encompasses more than 10% of California's remaining natural wetlands and serves as the resting and feeding ground for thousands of waterfowl migrating on the Pacific Flyway. In addition, the Marsh provides essential habitat for more than 221 bird species, 45 animal species, 16 different reptilian and amphibian species, and more than 40 fish species. The Marsh supports 80% of the state's commercial salmon fishery by providing important tidal rearing areas for juvenile fish allowing them to grow twice as fast as those reared in the upper watershed, thus, greatly enhancing their survival. Two hundred and thirty miles of levees within the Marsh provide critical protection of the drinking water for 22 million people by preventing salt water intrusion into the Delta. The Marsh's large open space and proximity to vast urban areas makes it ideally suited for wildlife viewing, hiking, canoeing, and other recreation opportunities.

#### Federal, State Agencies Release Environmental Document on Suisun Marsh Habitat, Preservation, and Restoration Plan

The Bureau of Reclamation and U.S. Fish and Wildlife Service, in partnership with the California Department of Fish and Game, have made available for public review an environmental document on the Suisun Marsh Habitat, Preservation and Restoration Plan. The agencies also have scheduled two public meetings to accept written comments on the environmental document.

The Draft Environmental Impact Statement/Environmental Impact Report (Draft EIS/EIR) assesses a comprehensive 30-year plan designed to address use of resources within about 51,000 acres of tidal wetlands in Suisun Marsh near Fairfield, California. The focus of the plan is to achieve an acceptable multi-stakeholder approach to the restoration of tidal wetlands and the enhancement of managed wetlands and their functions.

Federal and state agencies prepared a joint Draft EIS/EIR in accordance with the National Environmental Policy Act and California Environmental Quality Act. The lead agencies have collaboratively prepared the environmental documents with the National Marine Fisheries Service, the California Department of Water Resources, and the Suisun Resource Conservation District.

The two public meetings have been scheduled on November 18, 2010 to receive written comments regarding environmental effects:

- 2 – 4 p.m. at Rush Ranch, Grizzly Island Road, Suisun City, CA 94585.
- 6 – 8 p.m. at Benicia Public Library, Dona Benicia Meeting Room, 150 East L Street, Benicia, CA 94510.

The Draft EIS/EIR is available online at [http://www.usbr.gov/mp/hepa/hepa\\_projdetails.cfm?Project\\_ID=781](http://www.usbr.gov/mp/hepa/hepa_projdetails.cfm?Project_ID=781).

If you encounter problems accessing the Draft EIS/EIR online, please call the Reclamation Public Affairs Office at 916-978-5100 (TTY 916-978-5608) or e-mail [mppublicaffairs@usbr.gov](mailto:mppublicaffairs@usbr.gov). Please send comments to Becky Victorine, Bureau of Reclamation, 2800 Cottage Way, Sacramento, CA 95825, by close of business Wednesday, December 29, 2010. Comments may also be faxed to Ms. Victorine at 916-978-5055 or e-mailed to [rvictorine@usbr.gov](mailto:rvictorine@usbr.gov). For additional information or to request a copy of the Draft EIS/EIR, please contact either Ms. Victorine at 916-978-5035 (TTY 916-978-5608) or Ms. Sarah Swenty of the Fish and Wildlife Service at (916) 414-6571. Copies of the Draft EIS/EIR may also be viewed at Reclamation's Sacramento office at the above address.

#### RELATED TOPICS

- [Rush Ranch](#)
- [Physical Facilities constructed by DWR and USBR](#)
- [Ongoing Activities in the Marsh](#)
- [Geologic & Land Use History](#)
- [Suisun Marsh Monitoring Program Reference Guide Version 1](#)
- [Suisun Marsh Monitoring Program Reference Guide Version 2](#)

#### Suisun Home

- [Modeling](#)
- [Restoration Activities](#)
- [Program](#)
- [SMPA](#)
- [Data Reports](#)
- [Photos](#)
- [Maps](#)
- [IEP Home](#)

#### RELATED LINKS

- [Environmental Services](#)
- [IEP Home](#)
- [Dayflow](#)
- [DSM2PWT](#)

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• <http://www.water.ca.gov/suisun/>

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